

REMARKS

The specification was objected to for informalities. Applicant requests reconsideration. The specification has been accordingly amended. Claim 12 was objected to for informalities. Applicant requests reconsideration. Claim 12 was amended accordingly. Claims 10-14 and 16 were rejected as imparticular. Applicant requests reconsideration. The claims 10-14 and 16 were amended accordingly.

Claims 1-6, 10-11, and 13-16 were rejected as anticipated by AIAA. Applicant requests reconsideration. Claims 7-8 were rejected as unpatentable over AIAA. Applicant requests reconsideration. Claims 9 and 12 were rejected as unpatentable over AIAA in view of Amick. Applicant requests reconsideration. Claims 1, 13-14, and 16 were rejected as anticipated by Wallsten. Applicant requests reconsideration. The inventors executed invention disclosure documents between November and December 2002, describing the inventions, with an indication that the material in the invention disclosure will be published at the AIAA in April 2003. The application was filed within one year of the AIAA publication. The AIAA reference is not prior art and does not anticipate the present invention.

Claims 1, 13-14 and 16 were rejected as anticipated by Wallsten. Claims 13-14 and 16 were rejected as anticipated by Kaji. Claims 2 and 4-10 were rejected as unpatentable over Wallsten in view of Kaji. Claim 3 was rejected as unpatentable over Wallsten in view of Struble. Claims 10-11 and 15 were rejected as unpatentable

1 over Wallsten in view of Dever. Claim 12 was rejected as  
2 unpatentable over Wallsten in view of Kaji in view of Minahan.  
3 Claims 1-9 were rejected as unpatentable over Kaji in view Struble.  
4 Claims 10-11 and 15 were rejected as unpatentable over Kaji in view  
5 of Struble in view Dever. Claim 12 was rejected as unpatentable  
6 over Kaji in view of Struble in view of Minahan. Applicant requests  
7 reconsideration.

8  
9 The present invention uses an inflatable hinge, that when  
10 inflated determines, the angular displacement between two movable  
11 flat panels attached to the hinge. More particularly, the present  
12 invention includes a top film having a top circumferential length,  
13 the bottom film having a bottom circumferential length, the top and  
14 bottom circumferential lengths for angularly positioning the left  
15 and right panels.

16  
17 Independent Claims 1 and 13 were rejected as anticipated by  
18 Wallsten. Wallsten does not teach using a flex circuit, does not  
19 teach using wrap around contacts, does not teach a left frame with  
20 adhesive, does not teach a right frame with adhesive, does not  
21 teach a coating over the right film and left film, does not teach a  
22 sublimation powder, does not teach a hinge interconnecting panel  
23 does not teach panels, does not teach hinges, does not teach using  
24 films to define the positing but rather the complete frame of  
25 channels that determines the position, does not teach a hinge has  
26 no two panels are shown to move independently of each other, and  
27 does not teach coating layer to define the positioning between tow  
28 panels. Wallsten teaches air bags, teaches a network of inflatable

1 channels functioning as a frame within the walls of an air bag,  
2 teaches channels disposed as part of the bag walls, and teaches  
3 using a frame of channels to define an air bag

4  
5 Wallsten states: "Comprehensive experiments have shown that it  
6 is most suitable if the upper and lower parts 6, 7, forming the  
7 outer walls consist of a strong material, for example a textile  
8 fabric such as nylon, Orlon or glass fibre, or of some other  
9 synthetic or natural fibre material, in which case the bag wall can  
10 also be made of this material. By suitable choice of both material  
11 and weave, a limp and yet strong and flexible outer wall with  
12 relatively low extensibility can be obtained. In such a case, the  
13 inner wall may suitably consist of a thin preferably limp plastic  
14 material having good flexibility and elasticity greater than that  
15 of the outer wall. By good elasticity is meant that the material  
16 forming the inner wall can easily expand to the intended form and  
17 shape due to the forces operating during expansion, the inner wall  
18 having folds because the material has, for example, been folded or  
19 stretched in advance and/or because its strength properties easily  
20 permit extension due to plastic and/or elastic deformation. The  
21 folds 9 in FIGS. 3, 5, 7 and 9 indicate symbolically that the  
22 material has been folded and/or has good stretchability and can  
23 easily be expanded by means of extension in accordance with one of  
24 the methods mentioned. The two parts 6, 7 forming the outer wall  
25 can in this case suitably be joined by means of a seam of nylon or  
26 terylene thread, for example. Seams are suitable for various  
27 reasons, among which are that they give satisfactory strength and  
28 flexibility as well as providing a quick, simple, inexpensive

1 method of joining the two parts. In certain embodiments of the  
2 channels, it has been found suitable for the thin material of the  
3 inner wall to have an extensibility of at least 20 % in mutually  
4 perpendicular directions". (Col 5 lines 13-45)

5  
6 Wallsten clearly uses the air bag for inflation. Wallsten does  
7 not have anticipatory panels but only walls 3 of the air bag  
8 disposed between frame hinges. The diameter and pressure of the air  
9 bag define the positions of the walls of the air bang. The hinges  
10 do not define that the positions of the walls, as the hinges can  
11 flex up to 180 determined by the diameter of the air bag, and not  
12 the top and bottom layers. Claim 1 is not anticipated by Wallsten  
13 at least because Wallsten does not have panels and does not use top  
14 and bottom layers of the hinges for defining the angular position  
15 of the non-existent panels.

16  
17 Claim 13 includes the UV limitation that a coating disposed  
18 over the top film for passing the UV light for curing the curing  
19 resin and for static discharge protection of the film. Claim 13 was  
20 rejected as anticipated by Wallsten indicating that resin  
21 limitation is a product by process. In is clear that the present  
22 invention uses an UV transparent coating to cure a polymer for  
23 rigidity. Wallsten has not such function, but rather only relies  
24 upon air pressure and strong elastic properties of the material to  
25 keep the air bag inflated. Exemplar reliance upon a product by  
26 process is misplaced. The curing is in an uncured state before UV  
27 on-orbit exposure and a cured state when on-orbit, the claim  
28 addresses the resin in claim 1 as a "curing resin", indicating the

1 state the resin, as the device is being used and deployed, and not  
2 the making of the curing resin. The product is complete when  
3 launched having uncured resin in a first state. When deployed, the  
4 soft uncured resin changes its shape as well as its physical  
5 property of the materials. Nothing is being made on orbit as the  
6 curing resin was disposed in the device, and is part of the device.  
7 Just like a transistor being turned on and off, the resin has two  
8 states, uncured and cured during use. A solar cell degrades in  
9 space over time, yet, the solar cell in this degraded state "is not  
10 being made" by anyone, and the product is defined and made prior to  
11 use. There are no laboratory assistants attached to the satellite  
12 on orbit and floating in orbit, with a little UV lamp, curing the  
13 resin, before the product is used. It is the apparatus itself that  
14 is transforming itself do to its preexisting design. The curing  
15 resin is a resin have a uncured state before launch, and after  
16 unfurling, becomes cured by virtue of the action of the unfurling  
17 and exposure to SUN UV light on orbit. There is no PROCESS step  
18 being claimed. This is no product by process, as both the uncured  
19 and cured states of the curing resin are contemplated. Wallsten  
20 does not anticipate claim 13 at least because Wallsten does not  
21 disclose the use of a curing resin, that has two states when in  
22 use, a first uncured state and a second cured state, as is apparent  
23 from a reading of the claim 1 of the present invention.

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26  
27 Independent claim 13 was rejected Independent Claims 13 was  
28 also rejected as unpatentable over Kaji in view of Struble.

1  
2       Kaji teaches using a rod having predetermined diameter around  
3 which is disposed a flex circuit to form a bend in a flex material  
4 extending between two panels. The rod does not determine the angle  
5 of bend, but rather form a bend with that diameter so that the flex  
6 bend is round and large forming to the rod, so that the flex bend  
7 is not mechanical weaken leading to cracks and mechanical failure  
8 at the bend. The rod in Kaji does not determine the angular bend,  
9 but only determines the radius of the bend to prevent breakage at  
10 the bend.

11  
12       Struble teaches a sublimation power in tube for erecting a  
13 frame, but Struble does not teach erecting panels are there are no  
14 panels and no hinges. Struble is merely a prior art teaching that  
15 sublimation powders can be used to inflate.

16  
17 The combination of Kaji and Struble is impractical along the lines  
18 of the present invention. There is no way practical to combine  
19 Struble frames as hinges, because frames to not allow for the  
20 moving of independent panels. The combination of Kaji's rods that  
21 define a radius to prevent breakage and Struble's inflated frame  
22 does not include a layers for defining the angular position of  
23 deploying and moving panels.

24  
25       Claims 10-11 and 15 were rejected as unpatentable over Kaji in  
26 view of Struble in view Dever. Dever teaches a TinOx and Mag  
27 fluoride for pass UV light and conducting static charge. Dever does  
28 not teach using a layer, that can be used for static discharge,

1 that is also for passing through which UV light is passed that  
2 function to cure resin. There is no suggest in Kaji, Struble, or  
3 Denver to use hinge layers for defining the position and a curing  
4 resin for locking the panels into that position.

5  
6 Claim 12 was rejected as unpatentable over Kaji in view of  
7 Struble in view of Minahan. Minahan teaches wrap around contacts  
8 for solar cells. There is no suggest in Kaji, Struble, or Denver to  
9 use hinge layers for defining the position and a curing resin for  
10 locking the panels into that position. There is no teaching in  
11 Minahan to pass electrical wires around an inflatable hinge having  
12 defined positions.

13  
14 Claim 1 claims an inflatable bladder, top and bottom films  
15 extending between panels with the top and bottom films defining the  
16 angular positioning. Claim 13 claims a top film defining the  
17 angular positioning between panels and a curing resin cured by  
18 passing UV light through a static discharge layer

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1 Cited references do not teach or suggest an inflatable hinge  
2 for moving panels to panel positions, do not teach or suggest an  
3 inflatable hinge having cover layers for determining the panel  
4 positions, to not teach or suggest a curing resin for locking the  
5 panels into the panel positions, and do not teach a UV static  
6 discharge layer for passing UV light to the curing resin for  
7 locking the panels into the panel positions. Allowance of the  
8 claims is requested.

10 Respectfully Submitted

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